CLAIMS

What is claimed is:

1. A method for measuring fluid velocity using Doppler flow measurements from an ultrasound device, the method comprising the steps of:

obtaining information about angle constancy; and

reducing the effects of intrinsic power variability of Doppler frequency determination by using the information about angle constancy.

2. A method for measuring fluid velocity comprising the steps of:

obtaining a plurality of Doppler power spectra from an ultrasound device measuring a fluid velocity, each of the Doppler velocity spectra defined by at least two peak Doppler frequencies;

calculating angular positions of a velocity vector characterizing motion of the fluid velocity, each angular position calculated from the at least two peak Doppler frequencies of each of the Doppler spectra; and

determining a true angular position of the velocity vector from the calculated angular positions.

3. The method according to claim 2, further comprising the step of determining peak Doppler frequency errors.

4. The method according to claim 3, wherein each of the peak Doppler frequency errors is determined by minimizing a difference between a corresponding one of the

calculated angular positions of the velocity vector and the determined true angular position of the velocity vector.

5. The method according to claim 2, further comprising the step of determining true peak Doppler frequencies from the peak Doppler frequency errors and the peak Doppler frequencies corresponding therewith.

6. The method according to claim 5, further comprising the step of determining a corrected velocity vector from the true peak Doppler frequencies.

7. The method according to claim 2, wherein the Doppler power spectra obtaining step is performed over a given time period.

8. The method according to claim 7, wherein the true angular position determining step is performed by averaging a sum of the calculated angular positions.

9. The method according to claim 5, wherein the true peak Doppler frequencies are determined by subtracting the peak Doppler frequency errors from corresponding ones of the peak Doppler frequencies.

10. The method according to claim 2, wherein the fluid comprises an ultrasound scattering fluid.

11. The method according to claim 2, wherein the fluid comprises blood.

12. A method for reducing variability in vector Doppler velocity measurements, the method comprising the steps of:

obtaining a plurality of Doppler power spectra from an ultrasound device measuring a fluid velocity, each of the Doppler flow spectra defined by at least two peak Doppler frequencies;

calculating angular positions of a velocity vector characterizing motion of the fluid flow, each angular position calculated from the at least two peak Doppler frequencies of each of the Doppler velocity spectra; and

determining a true angular position of the velocity vector from the calculated angular positions.

13. The method according to claim 12, further comprising the step of determining peak Doppler frequency errors.

14. The method according to claim 13, wherein each of the peak Doppler frequency errors is determined by minimizing a difference between a corresponding one of the calculated angular positions of the velocity vector and the determined true angular position of the velocity vector.

15. The method according to claim 12, further comprising the step of determining true peak Doppler frequencies from the peak Doppler frequency errors and the peak Doppler frequencies corresponding therewith.

16. The method according to claim 15, further comprising the step of determining a corrected velocity vector from the true peak Doppler frequencies.

17. The method according to claim 12, wherein the Doppler power spectra obtaining step is performed over a given time period.

18. The method according to claim 17, wherein the true angular position determining step is performed by averaging a sum of the calculated angular positions.

19. The method according to claim 5, wherein the true peak Doppler frequencies are determined by subtracting the peak Doppler frequency errors from corresponding ones of the peak Doppler frequencies.

20. The method according to claim 12, wherein the fluid comprises an ultrasound scattering fluid.

21. The method according to claim 12, wherein the fluid comprises blood.

22. An ultrasound sound system for use in measuring fluid velocity comprising:

an ultrasound device for measuring a Doppler velocity signal; and

means for using constancy of a velocity vector spatial orientation from the measurement to correct for errors due to a random power characteristic of the Doppler signal.

23. An ultrasound sound system for use in measuring fluid velocity comprising:

an ultrasound device for measuring a Doppler velocity signal; and

means for reducing effects of intrinsic power variability Doppler frequency determination in the measured signal by using information about angle constancy.

24. The device of claim 23, wherein the ultrasound device uses at least two beams.

25. An ultrasound system for measuring fluid velocity, the system comprising:

an ultrasound device for measuring a fluid velocity and obtaining a plurality of Doppler power spectra, each of the Doppler spectra defined by at least two peak Doppler frequencies;

means for calculating angular positions of a velocity vector characterizing motion of the fluid flow, each angular position calculated from the at least two peak Doppler frequencies of each of the Doppler flow spectra; and

means for determining a true angular position of the velocity vector from the calculated angular positions.

26. The ultrasound system according to claim 25, further comprising means for determining peak Doppler frequency errors.

27. The ultrasound system according to claim 26, wherein each of the peak Doppler frequency errors is determined by minimizing a difference between a corresponding one of the calculated angular positions of the velocity vector and the determined true angular position of the velocity vector.

28. The ultrasound system according to claim 25, further comprising means for determining true peak Doppler frequencies from the peak Doppler frequency errors and the peak Doppler frequencies corresponding therewith.

29. The ultrasound system according to claim 28, further comprising means for determining a corrected velocity vector from the true peak Doppler frequencies.

30. The ultrasound system according to claim 25, wherein the Doppler power spectra is obtained over a given time period.

31. The ultrasound system according to claim 30, wherein the true angular position is determined by averaging a sum of the calculated angular positions.

32. The ultrasound system according to claim 28, wherein the true peak Doppler frequencies are determined by subtracting the peak Doppler frequency errors from corresponding ones of the peak Doppler frequencies.

33. The ultrasound system according to claim 25, wherein the fluid comprises an ultrasound scattering fluid.

34. The ultrasound system according to claim 25, wherein the fluid comprises blood.